



US009636809B2

(12) **United States Patent**
Lars Elsmark

(10) **Patent No.:** **US 9,636,809 B2**
(45) **Date of Patent:** **May 2, 2017**

(54) **POWER WRENCH**

(56) **References Cited**

(71) Applicant: **ATLAS COPCO INDUSTRIAL
TECHNIQUE AB**, Stockholm (SE)

U.S. PATENT DOCUMENTS

(72) Inventor: **Karl Johan Lars Elsmark**, Saltsjö-Boo
(SE)

5,105,519 A * 4/1992 Doniwa B23P 19/066
173/1

(73) Assignee: **ATLAS COPCO INDUSTRIAL
TECHNIQUE AB**, Stockholm (SE)

6,680,595 B2 * 1/2004 Ito B25B 23/1405
173/11

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 421 days.

2004/0182588 A1 * 9/2004 Tokunaga B25B 21/02
173/2

2013/0008679 A1 * 1/2013 Nishikawa B25B 23/1475
173/93

2013/0014967 A1 * 1/2013 Ito B25F 5/00
173/93

(21) Appl. No.: **14/390,750**

OTHER PUBLICATIONS

(22) PCT Filed: **Apr. 3, 2013**

International Search Report and Written Opinion dated Aug. 7, 2013
issued in International Application No. PCT/EP2013/000984.

(86) PCT No.: **PCT/EP2013/000984**

* cited by examiner

§ 371 (c)(1),

(2) Date: **Oct. 3, 2014**

Primary Examiner — Andrew M Tecco

(87) PCT Pub. No.: **WO2013/149724**

(74) Attorney, Agent, or Firm — Holtz, Holtz & Volek PC

PCT Pub. Date: **Oct. 10, 2013**

(65) **Prior Publication Data**

US 2015/0090468 A1 Apr. 2, 2015

(30) **Foreign Application Priority Data**

Apr. 3, 2012 (SE) 1250332

(51) **Int. Cl.**

B25B 21/02 (2006.01)

(52) **U.S. Cl.**

CPC **B25B 21/02** (2013.01)

(58) **Field of Classification Search**

CPC B25B 21/02; B25B 23/1475

See application file for complete search history.

(57) **ABSTRACT**

An electric power wrench for fastening and loosening joints includes: a main shaft for delivering a torque to a joint, an electric motor that is arranged to selectively drive the main shaft in two opposed rotational directions, a control unit for controlling the drive of the electric motor, and a transmission that connects the electric motor to the main shaft. The control unit has a first drive mode in which it controls the electric motor such that it delivers a continuous torque in a forward direction, and delivers torque pulses in an opposite backward direction, wherein the transmission includes an inherent play and wherein the torque pulses are produced in said play.

15 Claims, 2 Drawing Sheets

